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Radiation at Chernobyl 15,000%
above normal. What now ?



In this issue:
Disaster recovery
and assistance

AGENCY
INSIGHT

A closer look at disaster assistance

This edition of *Insight* looks at disaster assistance, a vital topic on which comprehensive information and analysis are still relatively scarce.

How well do government sponsored recovery programs help people who have lost their homes in flash floods? Can these programs restore the economy of a region devastated by a tornado? Does the disaster assistance provided to individuals have any financial benefit on the community? In this edition, these questions are tackled and interesting answers are uncovered.

The Alberta government contracted the firm of Peat Marwick Stevenson & Kellogg to shed some light on the effectiveness of disaster assistance in Alberta. Susan Bradley, a manag-

er with the firm, writes in her article starting on page 6 that Alberta's disaster assistance program not only has a national reputation for being comprehensive and benevolent, but has proven to have positive spin-off benefits.

The final report of the Industrial Recovery Assistance Program is summarized on page 9 by Rob Milroy, a Disaster Assistance Staff Officer with Alberta Public Safety Services. He writes that disaster assistance provided to businesses in areas devastated by natural disasters has helped employment levels to rise.

Pat Black, a member of the Alberta Legislature, describes on page 17 her own experience helping disaster

victims following last year's severe flooding in her Calgary riding.

Starting on page 11, *Insight* goes overseas to learn about the approach taken to disaster assistance in the wake of some of the modern era's most infamous disasters, including Chernobyl, Bhopal and Hurricane Hugo.

Though our focus is on disaster assistance, we haven't neglected the dangerous goods side of things. On page 21, Shaun Hammond, Executive Director of the APSS Dangerous Goods Control Division, dissects the thorny question of who's really in charge at a dangerous goods incident.

Insight is published quarterly by Alberta Public Safety Services (APSS). The publication aims to inform readers about current developments concerning topics which relate to the mandate of APSS: to prepare for, respond to and follow up on man-made or natural disasters in Alberta. This mandate includes activities in the areas of disaster services and management, as well as the handling, offering and transporting of dangerous goods.

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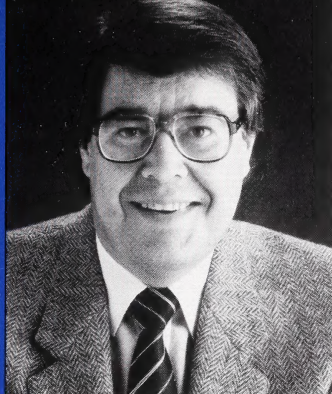
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On the cover: A geiger counter held in front of the Chernobyl nuclear power plant shows a deadly number. Photo by David Marples.

Alberta
PUBLIC SAFETY SERVICES

JUN 17 1991



*The Hon. Ken Kowalski, former
Minister of Alberta Public Safety
Services.*

APSS thanks Ken Kowalski

The Honourable Ken Kowalski handed over his portfolio of Minister, Public Safety Services to the Honourable Ray Speaker on March 5, 1991. Mr. Kowalski had been minister from 1986 until this year, with the exception of about a six month break from September 1988 to the spring of 1989.

During Mr. Kowalski's tenure, Alberta experienced severe flooding in several areas of the province from

other man-made and natural disasters.

The minister hosted Alberta's first ever meeting of ministers responsible for emergency preparedness. He also suggested a memorial service to honour all those who died and suffered during the 1987 tornado. The service was held exactly one year to the minute after the tornado struck, at Evergreen Mobile Home Park, in the presence of the Premier and other civic, religious and community leaders.

The minister attended the reopening ceremonies of many businesses that had been destroyed by the tornado. These businesses returned to normal operations after just one year, thanks to the Industrial Recovery Assistance Program, which was created by Mr. Kowalski to help get people back to work as quickly as possible.

Through all the trials and tribulations Alberta has suffered during the last few years, Mr. Kowalski was a tower of strength and a constant supporter of this agency. Without his interest and encouragement the agency would not have been able to help Albertans in trouble. As a result of all that has happened in the province during the last few years, Alberta has been able to set an example in emergency preparedness and response to emergencies

and has shown how an effective disaster assistance program helps mitigate the most severe effects that disasters have on people. Thank you, Mr. Kowalski!

It is now our pleasure to welcome the Honourable Ray Speaker as our new minister. Mr. Speaker was first elected to the Legislative Assembly in 1963 and has been re-elected in every provincial election since. He served as a minister of the Crown in two different portfolios in the late 1960s and was leader of the Official Opposition in the early '80s. Mr. Speaker was appointed Minister of Municipal Affairs on April 14, 1989.

Mr. Speaker took an early opportunity to visit the head office of the agency and meet many of the staff. We all look forward to working with Mr. Speaker, and only hope that perhaps there will not be quite as many disasters and emergencies during the next few years as there have been during the last.

"Through all the trials and tribulations Alberta has suffered during the last few years, Mr. Kowalski was a tower of strength and a constant supporter."

1986 onwards. The 1987 tornado devastated eastern Edmonton and western Strathcona County, causing 27 deaths, some 300 injuries and more than \$500 million worth of damage. There were also blizzards, chemical spills and



**The Hon. Ray Speaker greets
APSS receptionist Lori Giles.**

MAY FU

Helping Albertans in times of crisis

On March 5, 1991 The Honourable Ray Speaker was appointed Minister, Alberta Public Safety Services. *Insight* recently spoke with the new minister.

May I first welcome you, Mr. Speaker, to Public Safety Services. We all look forward to working with you and hope that we can continue these regular interviews with you for each edition of *Insight*. May I first ask if you are familiar with the work of the agency?

I am pleased to have the responsibility of being the minister of Public Safety Services and yes, I would like to continue the practice established by my predecessor of talking to *Insight* every quarter. To answer your specific question, as an MLA for many years and a member of Cabinet since 1989, I know a great deal about the work that the agency does to help provide a safer Alberta for everyone who lives in our province. I specifically worked with Public Safety Services last December when the Alberta government decided to provide disaster assistance for the drought-stricken southeastern areas of the province.

We hear a great deal about disasters, emergencies and catastrophes when they happen but rarely or ever after the event. Why is this

and why are you devoting this issue of *Insight* to talk about post-disaster recovery?

The point you make is an interesting one. What is news one day is no longer news the next. However, those people who suffered the effects of a disaster are still reliving the events and most probably have only just started to realize what has actually befallen them. In Alberta we have a record second to none of communities helping other communities in trouble. I have always considered that perhaps our most important job, once any casualties have been looked after, is to look after the survivors and to help them get back on their feet.

If one accepts that people really want to help others in trouble, what part should a government play in the recovery process?

The government of the day is "the people" and in a real sense, the government represents the people. If those not in trouble want to offer assistance to other members of their community who, through no fault of their own, are suffering, then the easiest and quickest way to provide help is to use the government agency which we set up for this very purpose. I refer, of course, to Alberta Public Safety Services, whose mandate is not only to plan for dealing with any

man-made or natural disaster that may strike Albertans, but also to promote rapid recovery after the emergency is over.

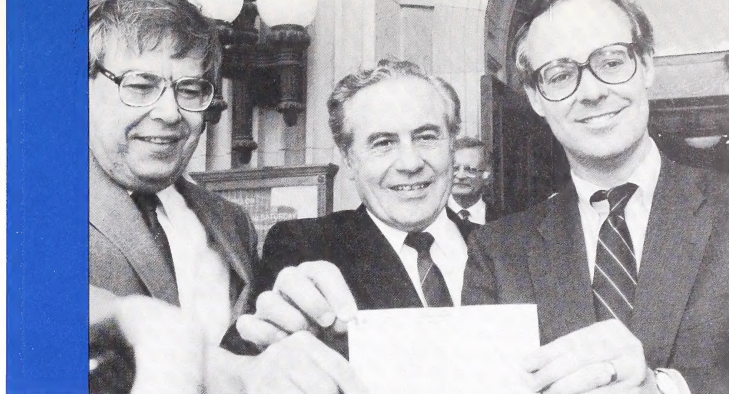
Does the taxpayer get value for money by providing disaster assistance?

Can you put a price on people's suffering and the loss of a lifetime's work? I think not. However, there is a real financial benefit to the community. As you know, disaster assistance is not a substitute for regular insurance. We only provide a safety net and consequently, the amount of money that is paid out by the government in relationship to all the resources which go into post-disaster recovery is relatively small. Nonetheless, if the help that is provided by the community enables those who have suffered to get back to work quickly, then we are helping the economy as a whole.

Has anyone studied the economic benefits that accrue to the community after assistance has been provided?

The answer is yes, in Alberta and not much anywhere else. Because we have an extensive, and I might add, compassionate program in Alberta, it was thought wise to validate our program on an economic basis rather than just on moral and

June 15, 1988: The Hon. Perrin Beatty (right), Federal Minister Responsible for Emergency Preparedness, presents a cheque for \$22 million to the Hon. Ken Kowalski, Minister Responsible for Alberta Public Safety Services (left), with Mr. Bill Lesick (centre), MP, Edmonton East, in attendance.



MAY FU

The federal contribution: Sharing the financial burden of recovery

*by Jim Hoffman
Regional Director, Alberta and
Northwest Territories
Emergency Preparedness
Canada*

humanitarian grounds. Peat Marwick Stevenson & Kellogg was selected to undertake an objective study of our programs. Their findings show that the aid we provide more than supports our feelings that disaster assistance helps not only those in trouble, but that the results are entirely positive for the community as a whole.

(Editor's note: A review of the Peat Marwick Stevenson & Kellogg study can be found on page 6.

Do you foresee any changes in the disaster assistance programs in Alberta?

I expect that there will be minor changes and improvements as the programs develop, but I do not expect that there will be anything major. We have been fine-tuning the program ever since it began. It is certainly a most comprehensive, effective and generous program and that's what we want it to remain.

A disaster doesn't end when the immediate danger is over and life-saving and care of the injured are complete. At this point the longest phase of any disaster begins—recovery. The recovery phase includes a wide range of activity from sustaining mental health to environmental restoration. Most often, the cost of recovery far exceeds that of emergency response. In some cases the cost of response and recovery creates a financial burden that needs to be shared. Since 1970, a federal-provincial sharing arrangement has existed.

The Disaster Financial Assistance Arrangements, administered by Emergency Preparedness Canada, were introduced in 1970. The assistance guidelines published at that time became the framework on which provincial assistance programs have developed over the years.

In the last 20 years there have been 62 instances where

provinces, required to carry a major financial burden for response to and recovery from a disaster, have requested federal assistance under the Disaster Financial Assistance Arrangements. These events have involved every province and territory for a total federal contribution in excess of \$160,000,000. Alberta has requested financial assistance on eight occasions for which the projected federal total contribution is expected to exceed \$45,000,000.

Provinces assume the first \$1-per-capita cost of the disaster. Thereafter the eligible costs are shared 50 per cent by the federal government and increased to 90 per cent once a cost of \$6 per capita occurs.



The Edmonton tornado reduced many buildings to shreds.

KEN TRYON

Study confirms: Disaster assistance pays off

by Susan Bradley
Manager, Peat Marwick
Stevenson & Kellogg

(Editor's note: In May 1990, Alberta Public Safety Services (APSS) initiated an external evaluation of the disaster assistance program. Peat Marwick Stevenson & Kellogg was selected to evaluate three large disasters: the 1986 North-Central Alberta flood, the 1987 tornado, and the 1988 Lesser Slave Lake area flood, in order to evaluate how effectively disaster assistance helps victims and alleviates economic devastation in the affected region. The study was financed by APSS and Emergency Preparedness Canada.

Peat Marwick Stevenson & Kellogg's project report, entitled *Alberta Public Safety Services: Evaluation of the Disaster Assistance Program*, will soon be released. *Insight* is pleased to present our readers with an advance look at some of the study's findings. The following summary was prepared by Susan Bradley, a manager with Peat Marwick Stevenson & Kellogg in Edmonton.)

Our evaluation of the Disaster Assistance Program shows that it had a significant impact on many aspects of disaster recovery, partic-

ularly on expediting victims' return to pre-disaster conditions.

The Disaster Assistance Program, one of Alberta Public Safety Services' many programs, is administered through the Disaster Assistance Branch. Started in 1973, this program provides financial assistance to individuals, farms, businesses and municipalities struck by disaster. The program operates in tandem with the federal Disaster Financial Assistance Arrangements, which provide financial assistance to the provinces when the cost of the disaster exceeds \$1 per capita.

More than 2,500 questionnaires were sent to individuals, farms and businesses that have received financial assistance through the Disaster Assistance Program. Sixty people were interviewed, including appraisers, program administrators, external individuals and disaster victims. While more than 50 recommendations were made for fine-tuning the program, we found that Alberta's Disaster Assistance Program had a reputation across the country as comprehensive and benevolent to Albertans. The experience gained in the 1987 tornado and recent floods has made Alberta's disaster assistance staff one of the most qualified in Canada.

Close ties to insurance industry

Disaster assistance generally does not pay for damages that are insurable, however, in special circumstances, such as in the 1987 tornado and the 1988 floods, this guideline is waived and insurable items qualify for assistance. The survey results indicated:

- Most—more than 60 per cent—of the disaster recovery costs was paid for by insurance.
- On average, 16 per cent of total disaster recovery costs was paid by disaster assistance. For farmers it was much higher, at 45 per cent.
- The major damage was to buildings, home furnishings, equipment, vehicles, and for farmers, to land and crops.

These findings illustrate the close relationship between the disaster assistance program and the insurance industry. The Disaster Assistance Branch employs insurance consultants and there is close interaction between Alberta Public Safety Services and the Insurance Bureau of Canada. One recommendation was to strengthen the relationship of the disaster assistance pro-

gram with the insurance industry, so as to keep roles clearly defined and maintain as much responsibility as possible within the private sector.

\$69 million paid

The \$69 million distributed to disaster victims after the two floods and the tornado had a significant impact on recipients and communities. Of the total, 33 per cent went to businesses, 21 per cent to municipalities, 19 per cent to farms, 16 per cent to other government departments, and 12 per cent to individuals.

About half of the payments went to the 1987 tornado victims and half to flood victims. The tornado was a large-scale disaster, with extensive damage and loss of life. That the flood payments were almost as large as the tornado payments illustrates the large amount of uninsurable damage that occurs in floods. The cost of flooding to victims and to the government is significant and emphasizes the need for preventative approaches to water flow management.

The large portion paid to businesses was primarily a result of the Industrial Recovery Assistance Program (IRAP), administered by the APSS Disaster Assistance Branch and Alberta Economic Development and Trade (editor's note: please see the following article on the IRAP program). The highest level of satisfaction with disaster assistance was shown by businesses, amongst which 90 per cent expressed overall satisfaction with the program.

Spin-off benefits

Our study showed that disaster assistance had a positive impact on the economy, particularly employment:

- On average, the disaster assistance program reduced recovery time by one half.
- A total of 1,700 person years of employment resulted from investing \$69 million in the local economies.
- More than 2,000 jobs were saved because of disaster program payments in the three events—mostly business and farm jobs.
- Fully 19 per cent of farms and businesses would not have survived without disaster assistance payments.

- Businesses and farms that received assistance have experienced strong growth since the disaster. Employment grew by 6 per cent, sales by 18 per cent and asset book value by 16 per cent.
- Some farms and businesses actually improved as a result of disaster assistance, through lower production costs and upgraded land and buildings, for example.

- For approximately 30 per cent of individuals, disaster assistance funding alleviated employment difficulties resulting from disasters.

The amount of assistance paid for each job saved was very close to the Alberta Government's estimate of the cost of a lost job. From this perspective, disaster assistance payments to businesses and farms were a cost-effective means of saving jobs.

Most recipients satisfied

More than 85 per cent of the respondents felt that the program filled a necessary gap in assisting disaster victims. However, there were two areas of concern to them: the need for effective communica-

tion and the amount of time taken to receive payments.

Communication is inherently difficult in a disaster situation, as normal information channels are blocked and ineffective. Particularly in the immediate post-event period, it is important for the disaster assistance program to increase awareness of the program's existence and to describe accurately the nature of the program. The disaster assistance program will be focusing on improving communications, so that people are accurately informed of what they can expect from the program.

The time taken to process applications could be reduced, and many of our recommendations focused on this objective. The longer the process takes, the less effective it is in speeding up post-disaster recovery.

Managing expectations

In some cases where assistance was provided to a level where people were better off after the disaster than before, disaster assistance was perceived as unnecessary or greater than needed. In Alberta, awareness of the program is at present relatively high, particularly among farmers. Expectations of the program need to be carefully managed within the framework of insurance and social programs.

The disaster assistance program faces challenges similar to those of the insurance industry. Insurance experts have noted that claims increase when people's awareness and expectations rise, although "need" essentially stays the same. Likewise, when the population becomes aware that disaster assistance is available, the expectations of people increase, and so does the number of applications and amount



KEN TRYON

of damage claimed. This puts pressure on administrators of the program to manage expectations according to program guidelines.

Farmers least satisfied

The issues surrounding disaster assistance to farmers are more complex than those for businesses, municipalities and individuals. Weather is part of the business of the farm and extreme weather conditions are part of the risk the farmer takes. Farming on flood plains is another complex risk scenario. To what extent should government compensate flooded farmers whose farms are located on flood plains?

There must be a balance between providing for victims of the disaster and validating actual damage. In the case of the Alberta Government's Disaster Assistance Program, the approach has been to err on the side of compassion. For the administrators, this means a well-defined, systematic approach to dealing with each disaster, including:

- Continual re-evaluation of the basic eligibility criteria
- Training of the appraisers
- Managing expectations through effective communication
- Penalties for system abusers

Staffing the front line

Front-line people are particularly important in the administration of the program. They deal with the disaster victims and are responsible for verifying and assessing damage as well as for providing information about the program. Often these people are also heavily involved in their communities and their views of the program are the views that are disseminated throughout the community. Front-line people should be actively involved in program design and administration.

Excellent value

Some of the comments that we received reflect the value of the disaster assistance program in the eyes of disaster victims:

- "We were very impressed with all aspects of assistance and early response."
- "My claim was handled promptly, fairly and efficiently."
- "Without it the company would have been many years getting back to some state of normalcy."
- "For myself the program was excellent, the people were understanding, listened and cared. No one was in a hurry and I was treated with prompt service. I just want to

say thank you to everyone who helped us survive this tragedy."

Other comments focused on the need for improvement in certain aspects of the program. The Disaster Assistance Branch of Alberta Public Safety Services has already taken steps to implement several of our recommendations.

Disaster assistance is unquestionably of great benefit to Albertans. If some Albertans are affected by a disaster, all Albertans, through the provincial government, assist individuals, farms, businesses and communities to recover as quickly as possible by providing financial assistance through the disaster assistance program.

Premier Don Getty cuts the ribbon at the reopening ceremonies for Contractors Machinery & Equipment Ltd., an Edmonton firm that received IRAP funding. Watching Mr. Getty are (left to right): Bernie Faloney of Contractors, the Hon. Ken Kowalski and the Hon. Peter Elzinga, Minister of Economic Development and Trade.

IRAP: A model for business recovery

*by Rob Milroy, Staff Officer
Disaster Assistance Branch, APSS*

The final report on Alberta's Industrial Recovery Assistance Program (IRAP), prepared by Alberta Public Safety Services in cooperation with Alberta Economic Development and Trade and Emergency Preparedness Canada, reveals that the disaster assistance provided to businesses helped spur economic growth and employment levels in areas that had suffered widespread destruction due to natural disasters.

The report outlines that between July 25 and August 3, 1987, Alberta experienced a series of weather systems of devastating proportions. The tornadoes and accompanying storms resulted in injuries, loss of life, destruction of property and extreme trauma. On July 6, 1988, a severe flood occurred in the Lesser Slave Lake region of Alberta and resulted in major destruction of personal and commercial property. In order to deal with this unique set of circumstances, the IRAP program was established. The program was

structured to deliver added support to the regular disaster assistance programs of Alberta Public Safety Services.

The IRAP report points out how the Government of Alberta recognized that the massive destruction of the tornado impacted on one of Alberta's major industrial areas and threatened thousands of jobs. The Industrial Recovery Assistance Program was mandated to assist businesses in re-establishing economic activity and maintaining employment levels.

It was further recognized that normal business insurance coverage could not readily and responsibly deal with the extent of damage incurred, particularly if those businesses were to survive and re-establish to pre-disaster conditions. The majority of damage was to buildings and equipment, but there were also many individual and extraordinary losses. The program and eligibility guidelines were developed in cooperation with various government agencies.

The report deals with the impact IRAP had on damaged businesses,



CONTRACTORS MACHINERY & EQUIPMENT

both small and large, and how the coordinating office administered financial and management assistance. The report lists IRAP's accomplishments, including the fact that of 185 businesses given assistance, 182 continue operations. The closing of the other three businesses resulted from economic factors that emerged subsequent to the tornado disaster. Furthermore, a total of 49 businesses would not have re-established operations had it not been for the assistance they received from the program. Many other businesses could have sustained operations only at a drastically reduced level.

In its three years of operation, IRAP proved to be an effective mechanism for delivering a unique set of initiatives. Of the \$23.4 million issued by IRAP in 1987 and 1988 for the catastrophic losses incurred, \$4.6 million was allocated for emergency grants, \$3.1 million for re-establishment grants, and \$15.7 million in forgivable loans.

In total, 212 businesses received financial and management support from IRAP. The support included, when necessary, stress management counselling and other forms of management advice. Today, the businesses that were so drastically impacted have been re-established to impressive levels:

- Employment has grown from the pre-tornado level of 3,920 to 4,726. In the Lesser Slave Lake

region, employment has grown from a level of 182 to 219.

- Investment has increased by \$35 million over and above the financial support issued for damage resulting from the disasters.

Businesses not only reconstructed their establishments, but are now using planning processes which to a large degree were not evident in 1987. The result is a modernization

effort which realized more viable, productive and efficient business operations.

The report further makes recommendations on how commercial considerations can be dealt with in future disasters. Further information on the report and the IRAP process can be obtained by contacting Alberta Public Safety Services, 10320 - 146 Street, Edmonton, Alberta T5N 3A2.

Conference studies use of technology in accident response

Delegates from Asia, Australia, Europe and North and South America attended the third Emergency Response (ER91) conference held in Calgary at the end of May. A total of 55 papers were presented on subjects related to the theme of the conference, the technological response to dangerous substances accidents.

The first ER conference was held in Vancouver in 1986 and the second in Halifax in 1989. Consideration is being given to holding the conference annually. ER92 is tentatively scheduled to take place in St. John, New Brunswick, in May, 1992.

ER91 was organized by the Major Industrial Accidents Co-ordinating Committee (MIACC), which will henceforth take over this event as a showcase for its work and a public forum where new developments in the response to the threat of a major industrial accident can be developed and promoted to an international audience.

The next issue of *Insight* will include a full report on this conference.

**Lab, Institute of Clinical
Radiology, Center for Radiation
Medicine, Kiev.**

Chernobyl: The disaster continues

*by Bonnie Shulman
Insight Editor*

David R. Marples, an Associate Professor of History at the University of Alberta, is a leading authority on the Chernobyl disaster. In his 1988 book on the subject, *The Social Impact of the Chernobyl Disaster*, published in Canada by the University of Alberta Press, he describes the efforts to evacuate and resettle entire towns located near the Chernobyl nuclear power plant, and some of the many problems associated with the recovery process.

Insight met with Professor Marples in his office at the University of Alberta and asked him about the uproar that continues in the Soviet Union to this day about the treatment of radiation victims.

"Immediately after the accident, there were no precautions taken whatsoever," he says. "The local population wasn't told what had happened; children continued playing as normal outside, in radioactive soil. When the decision was finally made to evacuate, the evacuees were simply told that they were leaving for a few days.

"Not all the areas were moved at

once. Just a 10-square kilometer zone was evacuated at first, and only later was the evacuation zone extended to 30 square kilometers. The evacuation took place in the same direction that the radioactive cloud was going, so in fact some people had to be evacuated twice.

"In many cases, livestock were taken with the evacuees, which was a tremendous danger because livestock tended to be extremely radioactive."

Dr. Marples says that the main criticism heard today in the USSR is that the evacuation simply wasn't extensive enough. The 30-square kilometer zone was just a tiny fraction of the area contaminated, and so the evacuation must still continue. Last year, about 70,000 people were evacuated in the Ukraine and about 100,000 in Byelorussia, the neighbouring republic.

To accommodate the displaced population, the Central Government of the USSR had to build new towns, 52 initially. The process of town building was done by necessity in the greatest of haste and has not been error-free. For example, Slavutych, a town built to replace the town of Prypyat, which was located closest to the Chernobyl plant, was discovered in 1990 to

have been built on a radioactive patch.

The hundreds of thousands of displaced families who left everything behind received in compensation from the Central Government a couple of months' salary, a moving allowance, and eventually, a new home in a new town. "The houses were built especially quickly and weren't always satisfactory, and yet, some people said the houses they moved into were better than the houses they had left behind," says Dr. Marples.

At first, the Central Government funded all relief efforts, but things changed in 1990, after Ukraine and Byelorussia both declared their sovereignty. "Both republics have their own programs to deal with Chernobyl, but there's still a centralized program in place. It's really confused right now," Dr. Marples admits, adding that the republics don't have the funds to deal with Chernobyl recovery efforts, and neither does Moscow. "The costs have escalated, and the country is using up its reserves," he says.

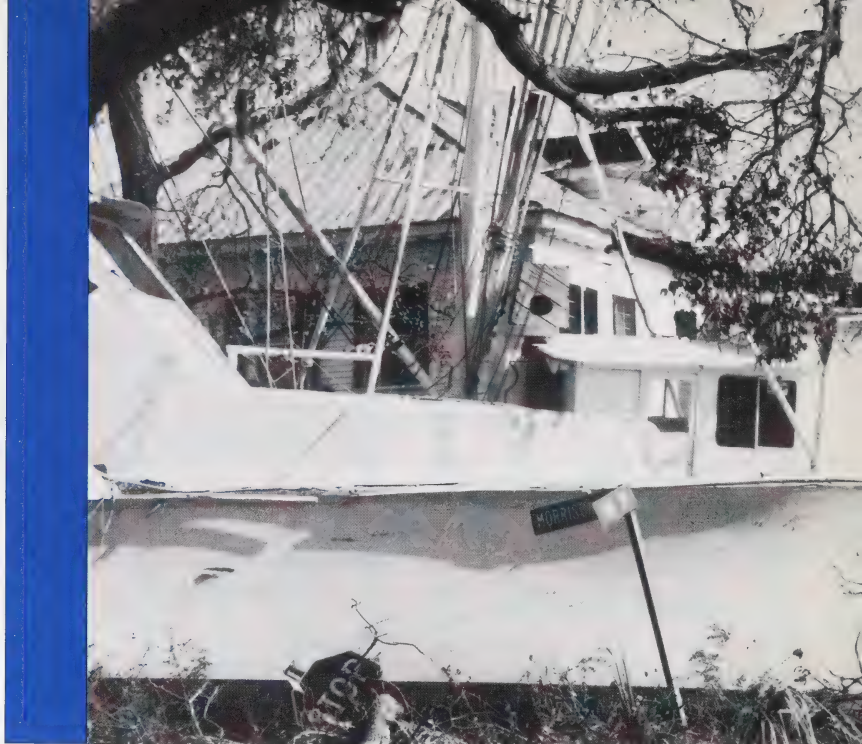
According to Dr. Marples, the major problem continuing to plague the region is low-level radiation. "Most Soviet and Western scientists concurred that there is no



DAVID MARPLES

problem with low-level radiation, but if that's so, how does one explain the current rise in illness? In Byelorussia the general level of illness has gone up about 1,000 per cent since Chernobyl. These illnesses seem to have been caused by the breakdown of the immune system, almost certainly because of increased exposure to radioactive elements in the soil and the food chain."

Dr. Marples says there wasn't a plan in place for a disaster of this scale, but what may have been equally important in saving lives would have been adequate information. "Confusion and mistakes were to be expected in such a situation," says Dr. Marples, "but on the other hand, one tends to find that lack of information was the chief problem. For example, all the health statistics were classified by the Soviet Ministry of Health and weren't made public until there was a public outcry. Even today, we still lack a realistic appraisal of the health consequences of Chernobyl."



Recovery from Hurricane Hugo: Lessons to be learned

(Editor's note: In September 1989, Hurricane Hugo hit South Carolina. One of the most powerful storms of the century, Hugo caused 13 deaths, as well as catastrophic residential and timber destruction. Hugo was the worst hurricane to hit the state in over a century.

Researchers Claire B. Rubin and Roy Popkin were in South Carolina shortly after Hurricane Hugo struck the mainland. Their goal was, in part, to identify issues and problems that arose during the recovery period.

In their report entitled *Disaster Recovery After Hurricane Hugo in South Carolina*, completed under a grant from the National Science Foundation, the researchers note problems that existed in all four phases of emergency management:

preparedness, response, recovery and mitigation. The report is available as Working Paper #69 from the Natural Hazards Research and Applications Information Center, University of Colorado, IBS 6, Boulder, Colorado 80309. In the following excerpt from that report, Rubin and Popkin demonstrate how recovery is hampered by lack of planning and by the difficulties of independent appeals for assistance.)

Functional problem areas in South Carolina

The delivery of services and assistance to victims had serious deficiencies, in terms of efficiency, effectiveness and equity. Some of the problem areas are as follows:



CLAIRE B. RUBIN

Distribution of food and clothing to victims

This is a basic function that should be manageable, but the overflow of donated goods proved seriously burdensome in Charleston County. The huge volume of goods required distribution and paperwork efforts that diverted key staff from more important functions. Tractor-trailer loads of old clothes and railroad box cars full of perishable commodities, like orange juice, got in the way of shipments of chain saws and other goods actually needed. Diversion of disaster personnel was very serious.

The convergence of donated food and clothing was an avoidable problem. It resulted from the Mayor of Charleston's persistent public appeals for donations of food and clothing (which may not have been needed by victims). Yet the mayor persisted in requesting donations.

His national appeals for donated clothing and food contributed to significant roadway congestion, a host of problems connected with a flood of phone calls and the diversion of disaster workers to deal with these unneeded donations. In spite of specific requests from the Red Cross, Salvation Army and Federal Emergency Management Agency (FEMA) officials to stop the requests for food and clothing, he persisted.

City of Charleston as focal point

Charleston was the focal point for goods and for federal and state assistance. It is the state's largest and best-known city; and its politicians were highly active and vocal. Media coverage focused on Charleston, and contributed to its being the center of attention. FEMA opened both its Disaster Field Office and the initial Disaster Application Center in the Charleston area, which contributed to the perceived inequity of the focus on the city of Charleston. The results were jealousy, rivalry and perceived inequity in distribution of goods, funds and assistance.

Lack of emergency management knowledge at county and municipal levels

In the intergovernmental relations section, the lack of theoretical and experiential knowledge about hazards and disasters was discussed. The lack of experience with hurricanes and the deficiencies of emergency management capability may have contributed to the ad hoc, uncoordinated efforts at the county and local level. They may also explain in part the highly politicized response and recovery efforts. There was a great deal of on-site, situational learning about FEMA, emergency management, and hurricanes in the aftermath of the disaster.

Building and construction codes and standards

In South Carolina, there is no state-wide building code. Also, no building codes or land-use controls exist in many counties. In instances where building codes exist, they have not been enforced effectively.

In the Copahoe area of Charleston County, a cluster of mobile homes located in the flood velocity zone was replaced. The county of Charleston allowed that mobile

home park to be rebuilt, against the advice of FEMA, which had offered to assist in finding and paying for an alternate site. The rebuilding was done using private foundation monies and the new mobile homes were placed on concrete pilings. Several officials expressed concern that the rebuilt mobile homes were at risk both from high winds and earthquakes.

In July 1990, staff members of FEMA's Regional Office had compiled a 16-page list of potential violations of the National Flood Insurance Program that they had observed during the rebuilding process in Charleston County alone.

Societal needs: Housing, personal and community welfare

Lack of social welfare responsibility and/or capability on the part of county government (at least in four counties) in South Carolina for citizens' needs was evident in the post-disaster period. Rare mention was made of community development or redevelopment agencies, planning and zoning departments, or housing agencies being involved in the recovery efforts. Few such agencies seem to exist or have a major role in South Carolina county government. For the most part, planning for and providing for replacement housing for victims

was being left to private, voluntary agencies.

In the four South Carolina counties visited we were not told of any local government involvement in generating low and moderate income housing and did not hear of any efforts to subsidize rents for low income persons needing to be rehoused after Hugo. (State and federal officials did notice this need, which was mentioned in after-action reports).

Housing construction

Various non-profit, ad hoc groups were created to provide repairs and to rebuild damaged homes (such as Interfaith groups and other private, non-profit foundations). Varying capability, interests, selection criteria, plus the short-term and transient nature of some of these organizations raise many questions about housing production and maintenance.

Some of these non-profit groups chose to build housing to a higher standard than the pre-existing conditions in South Carolina, especially for those with no running water and no electricity prior to Hugo. Some rehoused victims are better off in the short term, but there is concern that in the longer term they face expenses for increased assessment, taxes and utility bills. How will they pay these with a small, fixed income?

In the absence of publicly planned or managed housing, there is total dependence on private organizations, most of which are temporary, made up of non-community workers, who make their selection of recipients based on variable criteria and who determine locations and building standards for themselves. This raised questions about the equity involved in providing housing assistance to victims...

...The recovery experience in South Carolina raises many areas of concern that go beyond South Carolina. The problems experienced in the aftermath of Hugo have implications for the public and emergency management communities, for national disaster organizations (such as the American Red Cross) and for the hazard/disaster research community.



CANAPRESS PHOTO SERVICE/AP WIREPHOTO

The gas leak in Bhopal killed over 3,000 cattle. The carcasses posed a serious health hazard.

Caring for victims in Bhopal

by Professor Paul Shrivastava
Bucknell University
Lewisburg, Pennsylvania

(Editor's note: Just after midnight on December 3, 1984, a storage tank at the Union Carbide pesticide plant in Bhopal, India, began leaking methyl isocyanate gas (MIC). Terror-stricken people ran for their lives, but for many, it was already too late. By morning, the city was littered with the bodies of the deadly chemical's victims. By week's end, there would be some 3000 dead, and another 300,000 injured. This was the worst industrial accident in history.)

Professor Paul Shrivastava of Bucknell University in Lewisburg, Pennsylvania, is a native of Bhopal and a leading researcher into the Bhopal disaster. He is also the Founder and Executive Director of the Industrial Crisis Institute, Inc., a non-profit research organization devoted to analysis of industrial crisis problems. The following is an excerpt from his book *Bhopal: Anatomy of a Crisis*, available in the APSS Library or by writing to the author at the Bucknell University Department of Management, Lewisburg, Pennsylvania 17837. This excerpt is reprinted with kind permission of the author.)

Both the state and central governments of India had considerable experience in handling industrial

and natural disasters because they owned and operated most services and major industrial facilities as well as the railways, where accidents occurred most frequently. The standard response to disasters by government agencies reflects the government's frame of reference. These responses include: (1) mobilizing available resources at the disaster site for damage control, (2) handling rescue and relief, and (3) preventing political repercussions.

Mobilizing available resources

The Indian government provided 90 per cent of the rescue, relief, and rehabilitation efforts during the Bhopal crisis. These efforts included ex gratia financial payments, free food, and medical services. The financial payments were intended as temporary relief to tide victims and their families over during the crisis period. But these payments did not reach everyone.

By the end of June 1985, the government, with the assistance of doctors who conducted medical examinations, had identified only about 1,000 "severely affected" persons and had given them an average of \$118 (US) each. About 14,000 "moderately affected" persons, also identified through medical examinations, had received payments of about \$16 each. By the end of October, the survivors of about 1,499 deceased persons had received about \$830 each. In

addition, 22,000 families with annual incomes of less than \$500 received \$125 each in "consumption grants", which were meant to cover immediate needs and were not seen as compensation for the accident.

In the first six months after the accident, the government distributed about \$8 million in free food, for the most part grain and rice, to both affected and unaffected areas. By October 1985, this total had increased to \$13 million, but the food distribution ceased by the end of the year.

Medical relief efforts included the creation of a 30-bed hospital, two clinics with X-ray and laboratory facilities and 17 dispensaries in the 30 affected municipal wards. These facilities treated about 3,000 patients every day. In addition, the Indian Council of Medical Research (ICMR) conducted 21 research projects on the treatment of MIC-related ailments.

The government also initiated an economic rehabilitation scheme called STEP-UP (Special Training and Employment Program for the Urban Poor). In the first six months after the accident, this program gave 79 persons loans of up to \$1,000 each to start their own small businesses. In addition, the government helped Union Carbide workers find alternate employment in govern-

ment enterprises after the plant was shut down.

Rescue and relief effort

Despite the massive resources plowed into relief efforts—massive at least by Indian standards—results were unsatisfactory. A year after the accident, the government declared 36 of Bhopal's 56 wards "gas-affected areas". These wards had a combined population of 300,000. Yet 85 per cent of them had not received any financial assistance at all.

There were many reasons why the relief effort was not as effective as it should have been. One was a shortage of reliable information about the effects of the accident, which, in turn, hampered the design of the relief programs. In addition to the question of how many people had died or were injured, it was not even known exactly how many people lived in the affected areas. What little information was available remained under the tight control of the government. This raised anxieties among residents, politicized events and prevented volunteer groups from being effective.

Undoubtedly, a certain amount of information failure was inevitable given the circumstances. But part of the problem also was that the government based its relief program on an ongoing medical-social survey of affected neighborhoods. The survey was not completed

until several months after the disaster, and it was virtually impossible to identify, on the basis of the partial data, exactly who had been affected. As a result, relief efforts were not targeted to those affected by the accident.

In fact, vocal, aggressive, and politically well-connected people received relief benefits more quickly and in larger quantities than did needier victims in less powerful neighbourhoods. Likewise, the cyanide controversy also arose largely from a lack of information; doctors did not understand the effects of exposure to MIC well enough to determine whether cyanide treatment was warranted.

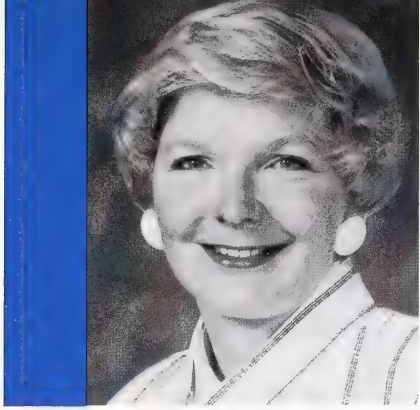
The government was unable to stop local moneylenders and middlemen from exploiting injured residents. These exploiters took commissions for their services in procuring relief benefits and confiscated relief money as repayment for earlier loans. These abuses prompted the government to substitute cheques for cash in making relief payments. But the abuses persisted because many recipients did not have bank accounts, which forced them to cash their cheques with the moneylenders at high discount rates.

Editor's note: Throughout his book, Professor Shrivastava demonstrates the importance of breaking down barriers between stakeholders in industrial crises

(corporations, governments and communities) in order to provide the most effective relief to victims.

He writes, "Very simply, stakeholders need each other. Corporations need the relief assistance and information that governments can provide, as well as the "early warning" and cooperation of communities. Governments need the technical advice and (in the many developing countries) the financial assistance of corporations, as well as grassroots help from communities. Communities, the most easily victimized of the three stakeholders, need information, resources, and cooperation from the other two stakeholders to survive industrial crises.

"Future Bhopals can be prevented only through the joint actions of corporations, governments and the public. They must work together...to ensure that we do not get ahead of ourselves in our race for progress."



A vital resource in time of need: Disaster assistance is both fair and necessary

by Pat Black, MLA,
Calgary-Foothills

(Editor's note: In August 1990, torrential rains flooded parts of north-western Calgary, causing more than \$5 million damage. This disaster seems small in comparison with others covered in this edition of *Insight*, but it did not seem small to the people who were devastated by their losses.

As MLA for Calgary-Foothills in the Alberta Legislature, Pat Black helped ensure that flood victims received disaster assistance. She spoke to Bonnie Shulman about the experience.)

"That Saturday (after the flood) I went to visit the homes of two of my constituents whom I knew to be in hospital. There was about 10 or 12 feet of water in each house. I went street by street through the riding. Some of the homes on Burgess Road were swamped with 14 feet of water and sewage. Freezers were floating upside down and there was sewage on the ceilings.

The rains had come so fast and fierce that the drain sewers couldn't accommodate the flow of the water. Even the pavement on the roads cracked under the immense water

pressure.

The first thing we did was find accommodation for people until they could return to their homes. It's amazing in a time of crisis how neighbors all of a sudden become a network of people helping people.

I phoned the minister responsible for Alberta Public Safety Services (APSS), the Honourable Ken Kowalski, at his home and explained to him what had transpired. He was about to leave town, but before he went he placed some calls immediately to the Disaster Services Division of APSS. The provincial government won't step in until the city asks for help, but the next morning, the mayor of Calgary did so. The acting minister of Public Safety Services, the Honourable LeRoy Fjordbotten, was notified.

I spent Sunday in my riding. On Monday morning I met with Mr. Fjordbotten and disaster services personnel in Edmonton. We flew to Calgary that afternoon and I showed them the devastation. Then I phoned various Cabinet ministers and the Premier's office and insisted that disaster assistance for the area be a Cabinet agenda item for Wednesday morning and a decision be made that day.

It was put on the agenda immediately. Approval was given Wednesday afternoon. By the following Monday, disaster assistance registration offices were set up in trailers parked in schoolyards and community centres.

One of the things that had to be clarified to people registering for financial aid from the Province is that our disaster assistance program is not a substitute for insurance. For example, it doesn't cover sewer back-up, because that's insurable.

You can't make people carry coverage if they don't want to. But you can't expect everyone else to pick up the bill when they choose not to.

Nevertheless, everything was done to be as fair to flood victims as possible. For example, seepage is normally excluded from disaster assistance because it is a very common occurrence throughout the province. However, because of the extraordinary rainfall in this case, a thorough review of criteria was conducted. An additional eligible classification, called "severe leakage" was approved by the minister responsible for Alberta Public Safety Services.



CALGARY SUN

Streets were turned into swimming pools following flooding in Calgary in August 1990.

"Severe leakage" was defined as the entry of water into premises through existing openings, provided that surface waters were lying above the grade level and water reached a depth of six inches or more within the premises. Such entry of water must not have been the result of improper grading, improper landscaping, building defects or improper maintenance.

All applications for disaster assistance that did not qualify by reason of seepage were carefully reviewed to determine if they qualified under the "severe leakage" classification. I don't believe you could be any fairer than that.

I think the \$1,000 deductible is also fair (editor's note: a \$1,000 deductible is applied to requests for assistance), because this is taxpayers' money, and people requesting assistance realized that. They shopped around for the lowest estimate.

Of course disaster assistance is necessary. Jobs have been lost in the community as a result of the disaster, and even people who are working full-time don't have a surplus of funds to replace all the essential items that they lost in the storm.

The disaster services staff did an exceptional job in an emotional situ-

ation, and they showed compassion to the victims. I think that everyone, whether they received financial assistance or not, was greatly comforted by the sincere expression of sympathy and understanding with which they were greeted at the disaster assistance offices."

(Editor's note: Due to lack of space, it was not possible to include in this issue details on the innovative one-stop disaster assistance centres that were first set up following the Edmonton tornado and have since been implemented in subsequent disasters in Alberta. Information on one-stop disaster assistance centres can be found in previous issues of *Insight* and in *Tornado: A report* (see adjacent article for ordering information).



ILLUSTRATION: GROUP WEST

Tornado: A report

The tornado that struck Edmonton and Strathcona County in 1987 resulted in 27 fatalities, injuries to more than 300 people and material losses of more than \$500 million. It was decided to provide a factual record of every aspect of the tornado, from the first weather reports to the final cleanup and rehabilitation.

Tornado: A report is composed of a series of individual but linked documents. It is the first document about the tornado to consist entirely of first-hand reports written by the major responders. The report is useful as a reference book, as a training tool and as a comprehensive record of the disaster that affected so many Albertans.

This report, which contains nearly 200 pages of reports, charts and maps, has now been printed and is available at \$17 (Cdn) a copy (plus \$1.19 GST) from the Government of Alberta Publications Centre, Publication Services, Queen's Printer Building, 11510 Kingsway Ave., Edmonton, Alberta T5G 2Y5. Please make cheques and money orders payable to the Provincial Treasurer. Visa and Mastercard are also accepted. For more information, contact the Government of Alberta Publications Centre directly at (403) 427-4952. The fax number is (403) 452-0668.

You said it...

(Editor's note: Our March 1990 edition featured an article entitled Risk Management in a Technological Society, written by Dr. John Shortreed, Associate Director of the Institute for Risk Research at the University of Waterloo. Jim Wright of the Risk Management Branch of Transport Canada responded to that article in the December 1990 issue. Insight received the following letter from Lesley O'Neil, Risk Management Analyst with Alberta Treasury, Risk Management and Insurance Division, on the debate between the two. The opinions expressed here are Ms. O'Neil's, not necessarily those of Alberta Treasury.)

Jim Wright has obviously learned his risk management at the same school as I and thousands of others in our field did—via the Risk and Insurance Management Society (RIMS) courses. His article is full of familiar terms and definitions, which the article by Shortreed wasn't.

I, too, felt the hackles rise when I first read Shortreed's article, but on revisiting it I was more comfortable. While he uses a number of different references, his summarizing "practical approach" echoes the "identify/analyze techniques—select and implement techniques—monitor" steps more familiarly referred to by Wright.

Perhaps it is time for risk management practitioners at all levels to give up protectionist attitudes to "their" perspective of risk management and learn to work together to further risk management as a whole. It would do us all good to

foster cooperation, which is how risk managers must, in most cases, get their organizations to move on risk management matters, rather than take pot shots at each other over the terminology and perspective used!

Introducing HERMES II

*Ena Spalding,
Communications Coordinator
Alberta Research Council*

HERMES II (an acronym for Heuristic Emergency Response Management Expert System) is a computer expert system that helps emergency response personnel to deal with hazardous situations involving dangerous goods. The prototype (Hermes I) was developed by the Advanced Computing and Engineering Department of the Alberta Research Council, together with Alberta Public Safety Services and Emergency Preparedness Canada.

As a result of the success of the user-friendly prototype in demonstrating the application of artificial intelligence techniques to emergency response management and training, the next phase of the project is now under way. The consortium which is funding the continued development is seeking a private sector company to participate.

This phase will include a re-implementation of the system on a more common platform, and interfaces to databases for chemical information and contact lists. The project team will also investigate the possibility of incorporating more robust environmental models, and of integrating the expert system with a geographical information system. (Editor's note: updates on Hermes II developments will be included in future issues of *Insight*.)



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*Compiled by Teresa Richey,
APSS Librarian*

To borrow material listed, send an interlibrary loan request form to Alberta Public Safety Services Library (AEPS), 10320 - 146 Street, Edmonton, Alberta, Canada, T5N 3A2. Materials located in the Coordination and Information Centre, at our Training School, the Government Emergency Operations Centre or our Reference Collection cannot be borrowed but can be referred to in the library.

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Who's in charge at a dangerous goods incident?

Viewpoint gives you, the reader, a soapbox to stand on and air your views. Start a debate: send your beefs and bouquets to Viewpoint, in care of Insight's managing editor.

*by Shaun Hammond
Executive Director,
APSS Dangerous Goods Control
Division*

In a recent *Dangerous Goods Newsletter*, Dr. John Read, Director General of the Transport Dangerous Goods Directorate, and Mr. Edgar Ladouceur, Chief, Operations and Planning in the Compliance Branch of the Directorate, focus on the age old question: who's really in charge at the scene of a dangerous goods accident?

Their analyses provide a good review of the problems and issues that have beset emergency responders for years: conflicts over jurisdiction, legislated authority, response priorities and expertise. Yet to infer, as these articles do, that we will never know before an incident who will be in charge, rather that we will know afterwards who was in charge, does not clarify

the situation, but simply adds to the confusion. If all goes well, the multitude of responders get it all together, and voilà, a smooth response follows. But each time an incident

"Each time an incident occurs, we seem to walk the plank."

occurs, we seem to walk the plank, hoping that any one of the historic hydras won't raise their ugly head. Talk about Russian Roulette.

Each of the participants in the response as described in the arti-

cles, have (from their point of view) a legitimate claim to "I'm in charge". Too often this attitude results in little or no communication with the other parties. For example, a rail company response team may decide it has jurisdiction over a railway derailment scene, because it is on a rail right of way. So what happens when the dangerous goods drift across a farmer's field, or into a nearby community? Who is in charge then?

Patience of Job

At times I wish that we could find that one person, empowered with all the legislated, jurisdictional authorities, the patience of Job, the wisdom of Solomon and the management skills to undertake the role of "the person in charge". But that person just does not exist. We learned that in the 1970s and '80s at major incidents like Mississauga, the Edmonton tornado, and the spill on Highway 831 in Alberta.

In undertaking these cold legalistic analyses of jurisdiction, constitutional authority, overlap, duplication, etc., we have lost sight of what we are trying to achieve at the scene of a dangerous goods accident:

To protect the public, their property, and the environment from the harmful effects of the dangerous goods accident.

If this is the goal, and surely this must be a primary objective, then we have to move ahead and beyond the disputes, the protection of "turf" and a myriad of other barriers to an effective response. We have to "manage" the response with the goal in mind. Consider for instance the Grange Report into the Mississauga derailment. Mr. Justice Grange writes on page 182:

"...I agree that fire and police

should always be part of the team where required and railway officials should always be part of any team—indeed as I have said they may often and perhaps generally comprise the whole team. In my view the proposal for a non-elected emergency commander is probably unconstitutional and wholly unrealistic. Where a spill is within a province and does not take on the proportion of a national emergency, the municipal and provincial governments are not only the lawful

"The local authorities are the most logical group to assume the responsibility mantle."

but the natural authorities and those governments are composed of elected politicians. Not only would those politicians expect to be in charge, they would be expected by the people they represent to take charge...

"...I do not, however, believe there is any reason or any justification for the federal government abandoning responsibility in all but national emergencies. I think the obligation remains to have a person or persons available and knowledgeable to attend at every accident where required, to assist and advise the municipal and provincial authorities..."

We could do well to consider the words of Mr. Justice Grange. His "team concept" enunciated in 1980, has been evolving to the principles of emergency site man-

agement as we see it today. The complex decision making processes at the scene and in the surrounding communities, rely on the management skills of a team of people, headed by the local authority, working towards that one common goal. The rest of us, having a legislative vested interest, would do well to simply be prepared to "assist and advise" when needed.

There are some tired old clichés which have a bearing on emergency response, one of which springs to mind: "If you fail to plan, you plan to fail."

Sound planning

But fundamentally, a sound emergency response plan at the municipal, provincial and federal government levels, and in industry, will ensure that many of these "problems" are identified and addressed in advance. Let's examine the situation in Alberta for example. Each municipality has a municipal emergency plan in place, detailing, from their point of view, how the community will respond to any emergency. One of the aspects of this plan is the designation of the management functions—the command and control responsibilities, which remain at the local authority level.

The local authorities are the most logical group to assume the responsibility mantle of "who's in charge". They know the local conditions, the local resources, the local concerns. They are the group that has spent hours putting together the municipal plan, getting the requisite training and exercising the plan. They know the limitations. It is incumbent on the higher orders of government to put in place support plans to these local efforts, to make sure the local emergency management structure is aware of the resources available.

It does nothing for the response to say that the local authorities are the first to respond and then hamstringing them by adding that they can only be in charge of things within their jurisdiction. In Alberta, the province has put in place the *Government Support Plan for Dangerous Goods Incidents*, detailing the resources available to the local authority to assist in overcoming jurisdictional hurdles.

In our Emergency Site Management courses, the local authorities experience simulated incidents that require them to coordinate the response from all levels of government and industry to achieve a successful conclusion of the emergency response.

This is the new response reality. It is in place, and is being taught and practised by the communities through which dangerous goods move. There is no place for jurisdictional wrangling at an emergency scene. All orders of government and industry must surely make their resources and expertise available to the local emergency management team as part of the integrated emergency response, to overcome any barrier that may stand in the way of a successful conclusion to the incident. We must try to ensure that confusion over this issue does not hinder the response from achieving its objective.

Perchloroethylene

Whiter whites and brilliant colors are in demand. For clothes that look great and smell fresh as well, the best bet is to dry-clean. Friendly neighborhood professionals use a very effective cleaning solvent known as perk, short for the more technical name—perchloroethylene.

Perk is listed as tetrachloroethylene in the Transportation of Dangerous Goods Regulations. This colorless liquid is characterized by a pleasant ether-like odor. Excessive exposure to airborne vapors can cause irritation of the respiratory tract and in very high exposures can even lead to death. Persons with respiratory problems may find themselves particularly sensitive to the odor of perk. Dry-cleaned clothing is aired at the dry-cleaners, but additional airing is always a personal option.

In addition to its use as a dry-cleaning solvent, perk is used as a vapor-degreasing solvent, a drying agent for metals, a heat-transfer medium and an ingredient in the manufacture of fluorocarbons.

Prolonged or repeated skin contact can cause dermatitis.

Maximum ventilation is required to keep vapors to a minimum in industry. If skin or eye contact with perchloroethylene occurs, rinse with large amounts of water.

Protection from vapors and skin contact is required when working with the substance. Emergency and non-routine exposure requires the use of a full face-piece respirator and neoprene or PVC-coated gloves. Eye protection and protective clothing are the best defence against splashes.

If a spill occurs, the area should be isolated and entry denied. The spill should be confined and prevented from entering sewer or fresh water systems. Crews should approach the spill from



upwind, pick it up on an absorbent solid and place the solid in a covered container for disposal. Contact with eyes, skin and clothing is to be avoided.

Scrap solvent and distillation residues are a hazardous waste. Their transportation therefore requires a waste manifest and all other requirements as set out by Alberta Environment, Industrial Waste Branch. Wastes in excess of five liters require placards.

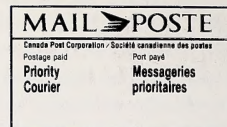
Perk is not a combustible product but can degrade when exposed to fire into phosgene gas and hydrogen chloride, the former being highly toxic and the latter a corrosive. Vapors are heavier than air and will collect in low-lying areas. Perchloroethylene should not be mixed with caustic soda or potash and may degrade or attack rubber. Disposal by incineration requires an approved incinerator with appropriate fume scrubbing.

Usually a stable compound, perk is classified in the Transportation of Dangerous Goods Regulations as a poison, Class 6.1, and further identified with the Product Identification Number (PIN) UN1897, Packing Group III. When transporting perk in amounts of more than 500 kilograms, use the Class 6.1, Packing Group III placard (the "X over a stalk of wheat" placard), white with black markings including a "6" in the toe. Documentation and training, as for the transportation of any dangerous good, are required for transporting perchloroethylene.

Alberta

PUBLIC SAFETY SERVICES

P.O. Box 10,000
Edmonton, Alberta T5J 2P4
If undelivered, return to the above address.



Transporting consumer propane tanks: A joint effort solves a problem

by Bill Smith, Chief Inspector
On Highways, APSS

Last spring, the middle management of two large propane firms approached Alberta Public Safety Services (APSS) in the hopes of resolving a problem involving the transportation of consumer propane tanks containing more than five per cent liquid propane. What followed was a cooperative effort between government and industry, and an excellent example of effective liaison that encourages interaction and understanding between the affected parties.

The Gas Protection Regulations as contained in CAN/CGA-B149.2-M86 restrict the transportation by road vehicle of a tank designed and intended for consumer use if the propane content exceeds five per cent of the water capacity of the tank.

This requirement can sometimes lead to situations where safety becomes a concern. In the typical example, a consumer will ask a propane supplier to retrieve a 500-gallon tank that may be still half full. The supplier must then visit the consumer's location and evacuate the tank before transport, and may even have to rig up some piping, or tilt the tank to carry out the evacuation. It is a time-consuming process which requires well-trained personnel to perform the tasks safely.

To address this concern, a joint meeting was held in April 1990 between representatives of APSS, Alberta Labour (the Plumbing and Gas Safety Services Branch and the Boilers and Pressure Vessels Branch) and Alberta Transportation and Utilities (Motor Transport Services). A draft bulletin was developed on how to safely transport consumer tanks when, due

to extenuating circumstances, the tank cannot be evacuated down to the five-per-cent requirement.

The draft bulletin was then sent for review and revision to the Propane Gas Association's Alberta Committee by Ken Fenning of Alberta Labour, and to Ron Shorten, chairman of the National B149.2 Propane Installation Code. Mr. Shorten, agreeing with the direction, proposed a docket to change the B149.2 Code. In addition, the National Liquified Petroleum Gas Association of the United States has also proposed changes similar to the draft directive to NFPA 58.

On January 9, the directive was signed by the Alberta government departments instrumental in its development. June was chosen as the date for the directive to take effect to provide sufficient time to notify industry.